Santa Clara River Valley Basin, Mound Subbasin

- Groundwater Basin Number: 4-4.03
- County: Ventura
- Surface Area: 14,800 acres (23.1 square miles)

Basin Boundaries and Hydrology

Mound Subbasin underlies the northern part of the Ventura coastal plain in the western part of the Santa Clara River Valley Groundwater Basin. The subbasin is bounded on the north by the Santa Ynez and Topatopa Mountains and on the south by the Oak Ridge and Saticoy faults (CSWRB 1956). The subbasin is bounded on the northeast by the Santa Paula Subbasin (CDPW 1933; CSWRB 1956). The subbasin is bounded on the west by the Pacific Ocean. Ground surface elevations range from sea level in the west to about 400 feet above sea level in the east (CSWRB 1956). The Santa Clara River and tributary creeks drain surface water westward into the Pacific Ocean. Average annual precipitation ranges from 12 to 16 inches.

Hydrogeologic Information

The primary water-bearing units are alluvium and the San Pedro Formation (CSWRB 1956). Groundwater in the alluvium is generally unconfined. Groundwater in the San Pedro Formation is confined in the west, with wells near the beach flowing occasionally (CSWRB 1956; Panaro 2000). The estimated average specific yield is about 8 percent (Panaro 2000). The average well yield is about 700 gpm and the average water-bearing thickness of the sediments is about 150 feet (Panaro 2000).

Water Bearing Formations

Alluvium. The Pleistocene to Holocene age alluvium consists of silts and clays with lenses of more permeable sand and gravel. The alluvium reaches a maximum thickness of about 500 feet.

San Pedro Formation. The Pleistocene age San Pedro Formation consists dominantly of fine sands and gravels. The San Pedro Formation extends as deep as 4,000 feet (CSWRB 1956; Panaro 2000).

Restrictive Structures

The Oak Ridge and Saticoy faults restrict groundwater movement along the southern edge of the subbasin. The Saticoy fault is considered either an extension or branch of the Oak Ridge fault and both faults are covered by a thin amount of Holocene alluvial gravel (CSWRB 1956). The Oak Ridge fault places water-bearing alluvium against older semi-permeable formations in the sub-surface (CSWRB 1956). The Saticoy fault creates a 50 to 100 foot drop in water level in its eastern portion, but apparently loses effectiveness as a barrier toward the west (CSWRB 1956).

Recharge Areas

The majority of recharge to the Mound Subbasin is from percolation of surface flow in the Santa Clara River and other minor tributary streams. Some of the surface flow in the Santa Clara River originates as release from Lake Piru and contains natural runoff of precipitation and imported State Water Project water (UWCD 2000). Subsurface flow from Santa Paula Subbasin, percolation of direct precipitation into the San Pedro Formation which crops out along the northern edge of the subbasin, and irrigation return provide recharge as well. Depending on the relative groundwater levels, subsurface water may flow into or out of the Mound Subbasin across the border with Oxnard Subbasin (CSWRB 1956). Groundwater in Mound Subbasin flows to the west generally toward the Pacific Ocean. During prolonged drought conditions, the groundwater table may drop below sea level near the coast (CSWRB 1956). This situation promotes seawater intrusion, though it has not been a problem to date.

Groundwater Level Trends

Hydrographs from the Mound Subbasin show a range of 100 feet in water level elevation since 1980. The hydrographs show a typical annual cyclic rise and fall of water level of about 20 feet with longer-term variations apparently following precipitation cycles. Water levels in the subbasin were low in 1991 and 1992, then recovered to long-term average levels by 1994 and remained near that level through 2000.

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity is estimated to be about 153,000 af, using an area of about 12,200 acres, an average water-bearing thickness of 150 feet, and an average specific yield of 8 percent (Panaro 2000). Though the surface area of the Mound Subbasin described in this report is larger than that utilized by Panaro, the additional area is mostly achieved by incorporation of exposures of the San Pedro Formation and shallow alluvium along the edges of the subbasin. The estimate by Panaro (2000) is likely appropriate for this subbasin.

Groundwater in Storage. The subbasin is estimated to have been 72 percent full in 1999 (Panaro 2000), implying groundwater in storage of about 110,000 af.

Groundwater Budget (Type A)

For 1998, the estimated applied irrigation water recharge was 7,740 af and the subsurface inflow was 3,920 af (Panaro 2000). Extractions in 1999 are estimated to be about 8,000 af (UWCD 2001).

Groundwater Quality

Characterization. TDS concentrations range from 90 to 2,088 mg/L (UWCD 2001). Analyses of water from 4 public supply wells show a TDS concentration range of 1,498 to 1,908 mg/L with an average of 1,644 mg/L.

Impairments. Unknown.

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	2	1
Radiological	2	0
Nitrates	2	0
Pesticides	2	0
VOCs and SOCs	2	0
Inorganics – Secondary	2	2

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range:	Average: 700 gpm (Panaro 2000)
	Total depths (ft)	
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
United Water Conservation District	Groundwater levels	1 wells/monthly, 6 wells/bimonthly, and 11 wells/semi-annually (UWCD 2001)
United Water Conservation District	Miscellaneous water quality	1 wells/monthly, 6 wells/bimonthly, and 11 wells/semi-annually (UWCD 2001)
Department of Health Services and cooperators	Title 22 water quality	4/quarterly

Basin Management

Groundwater management:	United Water Conservation District by AB3030 plan
Water agencies	
Public	United Water Conservation District, Fox Canyon Groundwater Management Agency, Ventura County Department of Public Works
Private	

References Cited

California Department of Public Works (CDPW). 1933. *Ventura County Investigation*. Division of Water Resources. Bulletin 46, 244 p.

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Additional References

Jennings, C.W., and Strand, R.G., 1969, Geologic Map of California: Los Angeles Sheet, Olaf P. Jenkins Edition: California Division of Mines and Geology, scale 1:250,000, 1 sheet.